



## Service-centered GIS: The Integrated Land Office

The Mecklenburg County, North Carolina Property Assessment & Land Records Management Division was charged with accelerating real property revaluation to a two-year cycle.

### Fueling Intelligent Decisions

In Mecklenburg County, North Carolina, GIS stands for Geospatial Information Services, with an emphasis on services. Thanks to the County's GIS group, real estate developers, attorneys, Planning Commission members, and citizens all have access to a rich array of essential map-based information at the touch of a browser button.

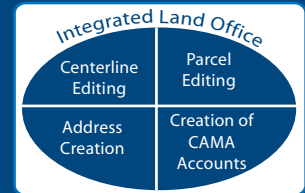
Few other counties in the nation provide as much real property and tax information via the Internet. Tax maps, owner information, and tax values, along with real property sales analysis tools, fuel the intelligent decision making that supports Mecklenburg County's impressive growth. Residents also turn to the County's GIS website (based on ESRI's ArcIMS™ technology) for answers to questions like "what school district are my children in" and "where do I go to vote."

To address these requirements, Mecklenburg County makes extensive use of ESRI technology, including ArcSDE™, ArcIMS™ and desktop products such as ArcInfo™. Because roughly 80 percent of the services that Mecklenburg provides touch on a geographic location, this technology forms the integration backbone for enterprise-wide information sharing. This integration is essential to keeping ahead of the demands of a population increasing not only in number, but in technical sophistication as well.

Comprising most of the area and population of Mecklenburg County, county seat Charlotte is the second largest banking center in the United States. The County and its "Queen City," as Charlotte is called, collaborate to provide police, fire, MEDIC (emergency medical), and utilities services to residents.

Mecklenburg County's population grew by 19 percent from 2000 to 2006, per Census Bureau figures. According to Garrett Alexander, the County's Tax Assessor, "We're about 350,000 parcels large; handling about 40,000 sales annually, as well as handling probably 50,000 or so building permits. Not all are direct new construction. If you build a 40-story high-rise, it generates a lot of permits."

The County Commissioners have charged Alexander with accelerating real property revaluation from its current four-year cycle to a two-year cycle. (The North Carolina state-mandated cycle is eight years.) The shorter revaluation cycle will make for more equitable tax assessments, in keeping with the rapid growth and change in the County. It will also increase revenue, enabling Mecklenburg County to continue to enhance services to its residents. Alexander says, "Our annual property tax base increases by approximately \$3 billion annually. At the current level of assessment, which is about 88.7 percent, we're looking at significant annual increases."

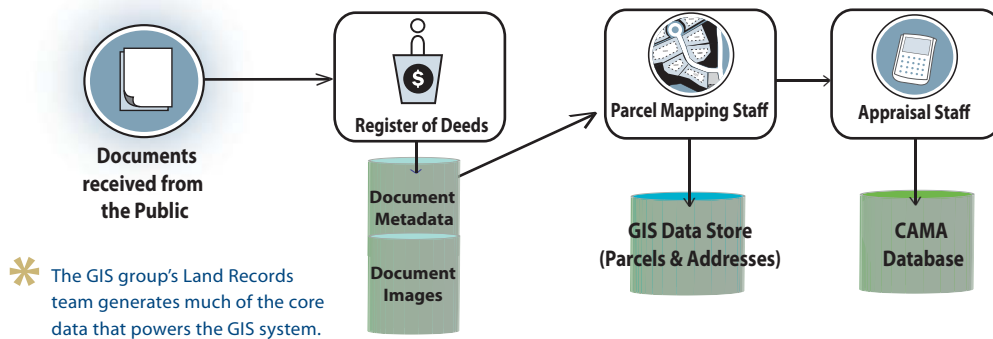


*The consolidation of resources brings together the talent and expertise needed to provide world-class geospatial information services to Mecklenburg County residents in the most efficient, effective manner possible.*

**NEW TECHNOLOGY, NEW PROCESSES**

As Tax Assessor, Garrett Alexander directs the County's Property Assessment and Land Records Management (PALRM) Division. The Division is currently involved with a major technology refresh – they are revamping all of their information systems to take advantage of newer technology and spatially enable personal and real property assessment, and ultimately tax collection. This

The GIS group's Land Records team generates much of the core data that powers the group's system. Everything else—distribution, custom mapping, application development—pulls from their data. Upstream from Land Records is the Register of Deeds Office; downstream is the Tax Assessor's Office. Land Records is currently implementing two software tools



systems overhaul will move operations to the Microsoft .NET environment, an Internet-based infrastructure based on the newest Web standards. The overhaul will also integrate many of the applications currently in use. In addition, GIS has also seen a major technology refresh as the County moves towards the ArcGIS™ family of ESRI products, and away from some of the older workstation-based products.

Several years ago, the PALRM Division consolidated resources with Information Services and Technology (IST) to create its current centralized GIS group. This consolidation brings together the talent and expertise needed to provide world-class geospatial information services to Mecklenburg County residents in the most efficient, effective manner possible. As GIS Director Kurt Olmsted says, "The goal is to keep management out of the way and let us serve the customer. We're tax-funded and overhead-funded from building permit fees and various fees from LUESA [Land Use and Environmental Services]."

*Geographic information technology forms the integration backbone for enterprise-wide information sharing.*

that will significantly streamline the flow of information: ParcelSync™ and AddressOne™ from Hart InterCivic.

Hart's ParcelSync is a GIS software product built on top of ESRI-based technology (more precisely, it's an extension of ESRI's ArcInfo™). ParcelSync allows a GIS user to simultaneously edit both GIS and computer-aided mass appraisal (CAMA) data and to update the two databases in tandem. In addition to integration with CAMA systems, ParcelSync may be integrated with records management systems to provide property mapping staff with access to source documents and to leverage document metadata to populate CAMA system attributes. For Mecklenburg County, Hart is integrating ParcelSync with the system that manages land records within the County's Register of Deeds Office.

AddressOne melds mapping technology and database technology in a single application, allowing users to track and manage addresses enterprise-wide. AddressOne also provides ArcMap™ extensions that allow for the creation and management of the relationship of addresses to geography.

*“Data that comes from the Register of Deeds system will be inherited directly into the Contributor form in ParcelSync and pushed on to the CAMA system, so you don’t have to re-key that data.”*

**Kurt Olmsted, GIS Director**

The Land Records and Addressing division of the GIS group previously existed as two separate departments that handled addressing, centerline maintenance, and parcel mapping. When asked whether it was worthwhile to bring the groups together, Land Records Manager Rhonda Buckner said, “It was a challenge. There was a lot of redundancy in data maintenance. And there still is. That’s what this [ParcelSync and AddressOne] technology is going to help us with. But having all the functions together in the same group means there’s a lot more synchronization. We’re able to get all the pieces of the data done in a timelier, more efficient manner, because we’re just sitting across the way from someone who’s maintaining another piece of the puzzle. If there are questions—if something doesn’t look right or isn’t matching up—it’s as simple as getting up and walking 10 feet to the neighbor’s cubicle and saying, ‘Look at this with me,’ and getting it fixed right.”

**STREAMLINED WORKFLOW**

Like many local government entities, Mecklenburg County’s Land Records team is being asked to handle an ever-increasing amount of work, while keeping staffing levels constant. Buckner explains, “The volume here is extreme. We get an average of 25 to 30 new

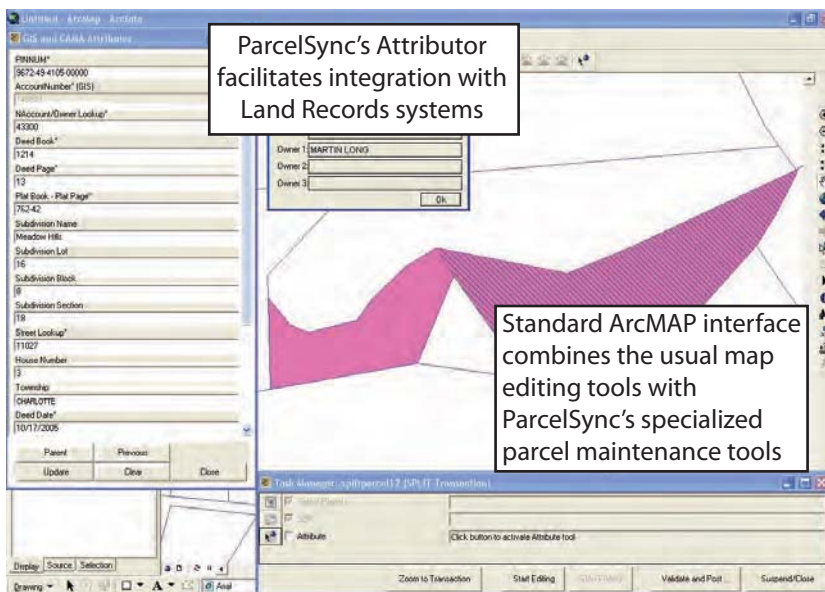
subdivisions a month.... We’re seeing a lot more multi-family and urbanization uptown, with all the high-rise condos. There’s no more land, but there are a lot more parcels per acre being created. We get in an average of 200 to 400 new deeds a day. We’re very busy; we’re a high-volume shop!”

Last year, North Carolina passed a statute requiring that land records data be current for the collection of delinquent taxes. This statute, combined with the target

two-year revaluation cycle, will necessitate speeding up the already-prompt processing of real property records. The increased currency will also support the budget process, providing valid data for solid decision-making.

Smooth flow through the land records process is essential to Buckner’s staff

being able to turn the crank faster on processing new parcels. Buckner is convinced that ParcelSync’s integration with the Register of Deeds system will constitute a huge process improvement for her group. For each deed from the Register of Deeds Office, the Hart tool will automatically push data that the Register of Deeds office captures about the deed (grantor, grantee, and similar data) and TIF images of



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the original documents onto a Land Records server, sorted by document type. The tool's management interface will allow team leads to further refine the sorting process and assign deeds to mappers' work queues. The applicable data from the deed will automatically populate the appropriate fields in the ParcelSync Attributor form.

Contrast this new process with the current paper-based one. Today, Land Records staff members print the deeds and process them manually. According to GIS Director Kurt Olmsted, "If you go out there right now to the shelves, we have stacks and stacks of deeds that we have to print. We stack; we sort; it's a waste of time. If we can pull that data in digitally, it'll save time and space."

The upstream integration with the Register of Deeds' system will smooth the flow downstream as well, to the Tax Assessor's CAMA system. Data entry specialists in Land Records currently hand-write data control forms for data entry into the CAMA system. As Kurt Olmsted describes the new process, "Data that comes from the Register of Deeds system will be inherited directly into the Attributor form in ParcelSync and pushed on to the CAMA system, so you don't have to re-key that data." The Attributor form will also be pre-populated with current assessment data.

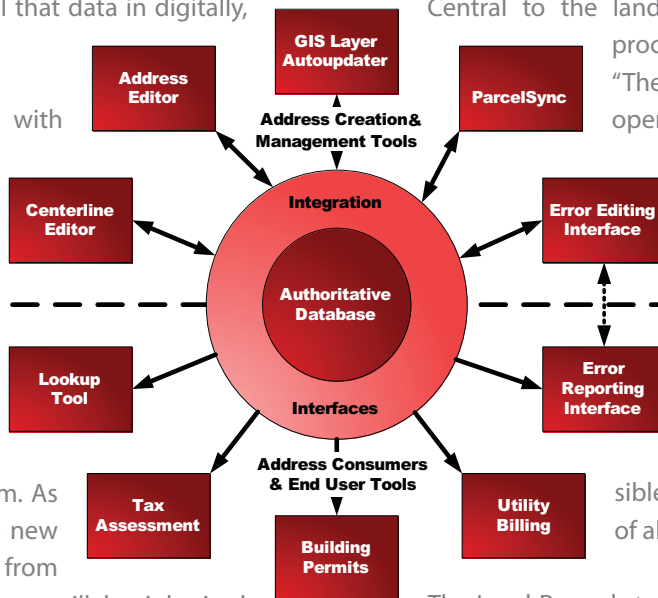
Mappers can then enter any changes taking place in ownership, acreage, legal description, or other attributes. Applicable changes committed to the GIS database will go directly into the CAMA system as well.

All the handoff points—from the Register of Deeds to Land Records, from Land Records to the Tax Assessor's Office—present accuracy and consistency issues in a manual process. Each transaction is an opportunity to introduce inconsistent or incorrect information into one or more of the systems. Automating the handoff process eliminates these problems.

**MANAGING ADDRESSES ENTERPRISE-WIDE**

Central to the land records flow is the addressing process. According to Rhonda Buckner, "The way Mecklenburg County operates, everything is tied to an address—everything. You cannot pull a permit for anything in Mecklenburg County unless an address is assigned. Signs, meter boxes, water meters, anything that needs a permit must be addressed." Buckner's Land Records staff is responsible for assignment and maintenance of all addresses countywide.

The Land Records team currently maintains the Master Address Table, a comprehensive database created in 2004 to provide a central repository for addresses. Land Records personnel manually enter the address, parcel ID, and X/Y coordinates for each parcel in the County. Addresses are



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**David Reeves, IT Project Manager**

maintained separately in the CAMA system, along with the associated parcel ID and ownership information. The Master Address Table and the CAMA system do not talk to each other, but they are tied to the parcel layer in the ESRI geodatabase. With the implementation of Hart’s AddressOne application, Land Records staff members will be able to enter data one time in a single database. AddressOne will then disperse the data to the appropriate points in various systems. This will eliminate redundant data entry and will increase the accuracy and consistency of address data enterprise-wide.

Another issue that Mecklenburg County is working to resolve is the challenge of generating workable mailing addresses. Many mailings sent using the current address databases have been returned, because they’re not formatted to the standards required by the United States Postal Service (USPS). Using the address of a parcel’s physical location—called the situs address—can cause mailing problems as well. A vacant lot has a situs address, but the Post Office won’t deliver to a vacant lot.

AddressOne will provide a mail-friendly address source by supplying addresses in a USPS-compliant format and allowing for the maintenance of multiple, purpose-specific addresses. Along with the situs address for each parcel, AddressOne will contain any additional addresses that apply to the parcel. A commercial property, for example, may have current addresses for the owner, the property management company, the construction company that pulled the building permit, and others.

*The anticipated benefits are efficiency, sense of ownership, accountability, and better distribution of workload. The new toolset integrates processes in a way that is conducive to start-to-finish processing.*

#### WORKING WITH HART

What characterizes Mecklenburg County’s experience with Hart during the ParcelSync and AddressOne implementations? Tax Assessor Garrett Alexander says, “Hart has a very close understanding of what we want to do because they have participated in those industries that make up the tax business—GIS, Register of Deeds, assessment and collections. Hart was able to establish a strong rapport with us and to provide service for us immediately. It wasn’t like we spent months and months trying to come up with a way to work together.”

Alexander continues, “Too, because of the level of sophistication Hart has with GIS, they saw how our vision could achieve improved results for all our jurisdictions. It goes right down to the people—I think Hart has some of the most innovative people in this area of business in the nation. Their leadership and commitment to the customer has been a key part of it for me.”

Alexander expresses particular appreciation for Hart’s project management approach. “They’ve maintained a very strong project management orientation. We might have an idea about something we want to accomplish but have a wrong idea about how to achieve it. They’ve challenged us to rethink our approach and come up with a solution.”

#### SOLVING A TOUGH PROBLEM TOGETHER

Most jurisdictions face an impasse trying to link building permits to parcel IDs. When a permit is issued for a subdivision, the parcel doesn’t yet exist. Rhonda Buckner and her team came up with an interim solution, which they refer to as “reserved parcels.” They pre-assign the parcel ID to a new

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***Garrett Alexander, Mecklenburg County Tax Assessor***

address even before the parcel is created. That allows the Parcel ID on the address that is going into the permit system to be the same as the parcel created once that becomes a legal lot. The creation of the reserved parcels significantly improved the rate for matching permits to parcels, previously a dismal 35 to 40 percent.

According to Buckner, “Having those placeholder parcels in the CAMA system is helpful in getting the permit data into the CAMA system, but it gives the Tax Assessment Office a lot of heartburn, too, because it skews reports. We have to close them all before billing; otherwise bills get sent [on nonexistent parcels].”

By using AddressOne and ParcelSync together, Rhonda Buckner and Hart’s Project Manager developed an elegant solution to a tough problem every jurisdiction faces. The AddressOne application will allow users to create addresses based on a preliminary plat before the permit is issued and reserve the parcel ID that is going to be put on the address point. When the user later maps the parcel, ParcelSync will automatically retrieve the information entered during preliminary platting. ParcelSync will then propagate that information to both the map and the CAMA system. This means the building permit will be imported into the CAMA system with the correct parcel ID. Buckner says, “We’ll still have reserved Parcel IDs, but they’ll only reside on the mapping side. They won’t be on the tax side.

That’s going to be a big help. We spent hours devising this process. It’s a problem everybody has. Most people haven’t come up with a way to work through it.”

**PARTNERING WITH INFORMATION TECHNOLOGY**

Another critical component to success is making sure the new Hart applications are compatible with the existing Mecklenburg County information technology infrastructure. Mecklenburg County makes heavy use of information technology to enable approximately 5,000 employees to provide a broad range of services. David Reeves is the County’s IT Project Manager assigned to the Tax Assessor’s technology upgrades. He says, “Hart follows software development and project management best practices. They work hard to make sure the behind-the-scenes technical details are taken care of. They build products in a way that allows us to leverage investments we have made in our technology infrastructure. Hart is clearly committed to making sure their products meet customer needs and are successfully implemented.”

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*What drives Mecklenburg County to continually refresh its technology infrastructure?*

*Commitment to keep up with the leading edge of business*

*Unwavering focus on providing exceptional customer service*

*Fast-growing, increasingly sophisticated population*

*Accelerated revaluation cycle (moving from current 4 years to 2 years)*  
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**LOOKING FORWARD**

Mecklenburg County’s GIS group is looking forward to the changes brought about by adding such tools as ParcelSync and AddressOne, as well as the migration to a modern ESRI environment. Rhonda Buckner and her director, Kurt Olmsted, envision fully cross-training the Land Records staff. Team members currently specialize in mapping, data entry, or address assignment. With



cross-training, each will be able to take a subdivision project from start to finish – enter the street centerline geometry, assign the addresses, and create the parcels. The anticipated benefits are efficiency, sense of ownership, accountability, and better distribution of workload. The new toolset integrates processes in a way that is conducive to start-to-finish processing.

Another potential process improvement is using AutoCAD plats and subdivisions submitted to the Planning Commission to create parcel geometry in the geodatabase. The technology being implemented supports digital AutoCAD submittals as well. In today's process, mappers use distance and bearing calculations to create subdivision lines in the geodatabase; it might take three days to enter a 100-unit subdivision. Collecting the AutoCAD drawings from the developers as part of the plat approval process will require a business process change—and possibly an ordinance. The efficiency and accuracy gained will make such a change worthwhile.

Mecklenburg County's vision extends beyond its borders. In addition to regional initiatives, Tax Assessor Garrett Alexander is working to form an alliance with many of the 250 largest counties in the U.S. The purpose of this alliance is to advance the technology and practices that improve the quality and equity of assessment, while reducing the amount of manual labor currently required.

Alexander says, "We've got to find a way to renew technology on regular intervals that keep pace with the leading edge of business, because business is going to go to the next level. If we don't keep up with it, our business processes will soon be antiquated." Alexander believes that "government in general is moving toward the state-of-the-art information systems like you see in Wake and Mecklenburg Counties; they're just moving more slowly. They may not arrive at where we are today until 10 years from now, but they'll get there. We should be designing systems that allow them to get there quicker."

*Learn more about Hart InterCivic's products and services. Visit us at [www.hartintercivic.com/geocontent](http://www.hartintercivic.com/geocontent).*

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